

**Abstract of the Invention**

The invention provides fusion protein reporter molecules that can be used to monitor protein modifications (e.g., histone modifications) in living cells, and methods of using the fusion reporter molecules for diagnosing protein-modification-associated disorders (e.g.

- 5 histone-modification-associated disorders). The invention also provides methods of using the fusion protein reporters to identify candidate pharmaceutical agents that effect protein modification in cells and tissues, thus permitting identification of candidate pharmaceutical agents for treatment of protein-modification-associated disorders.